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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

October 5, 2010

TO: File

THRU: Daron Haddock, Permit Supervisor *DRH*

FROM: James D. Smith, Environmental Scientist III *DS 05 Oct 2012*

RE: Amendment to Update MRP, PacifiCorp, Deer Creek Mine, Permit C/015/0018, Task ID #3613

SUMMARY:

On June 30, 2010, the Division received an amendment to update text, maps, and data for Volume 11, including Appendices 11A and 11B, of PacifiCorp's Deer Creek Mine MRP. The amended Appendix Volume 11B includes updated, as-built hydrological design information for the Rilda Canyon facilities - including text, tables, figures, and appendices - that is intended to replace the entire Hydrology Section of Appendix 11B. (This amendment is the first of three and provides as-built conditions in Rilda Canyon: the two subsequent amendments will be to update bonding calculations for the Rilda facilities and to reduce the permit area for the entire Deer Creek Mine to only those areas that are bonded.)

As-built facilities include one ventilation portal and one travel access portal, fan, substation, covered material storage, covered oil storage area, rock dust silo, paved access road and mine yard, sediment basin, and sedimentation pond. Construction of the facilities began in 2006 and was completed in 2009, with a December 1st to April 15th exclusionary period observed every year.

The Division should approve this amendment.

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TECHNICAL ANALYSIS:

OPERATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

Diversions: General

The Permittee revised Tables 6, 7, and 8 to include accurate ditch and culvert lengths and assure that correct lengths were used to calculate the slopes, which were input for the ditch and culvert design calculations in Appendices 2 and 3: there were no changes to Table 9. In the initial (June 30, 2010) submittal, not all ditch lengths listed in Tables 6 and 7 or culvert lengths listed in Table 8 matched the ditches and culverts as they were shown on Map 700-2.

- Table 6 listed UD-5 as 390 feet long but UD-5 measured approximately 300 feet on Map 700-2 (1"=100').
- Table 7 showed DD-3 as 785 feet long but it measured approximately only 275 feet long on the map.
- Table 7 showed DD-4 as 630 feet, but this ditch is approximately 400 feet on the map.
- Table 8 listed UC-2 as 308 feet long, but on the map it measured approximately 150 feet.

These lengths are now shown in the tables as, respectively, 303, 269, 394, and 154 feet, which more closely match what is shown on the as-built drawing Map 700-2.

Ditches UD-4 and UD-5

The Permittee also revised the length and slope for UD-4 in Table 6, even though the Division had not identified this as a deficiency. The new length, 364 rather than 277 feet, more closely matches what Map 700-2 shows. The Permittee increased the slope from 4.5 to 6.9% rather than decreasing it as the greater length would indicate, so - although this is not discussed in the MRP - the Permittee also has revised the elevation change.

Apparently based on the updated length of UD-5, the Permittee provided a new slope value for this ditch. Using FlowMaster (Haestad Methods, Flowmaster, Version 5.13), the Permittee recalculated ditch design parameters for UD-4 and UD-5 (for 10-year, 6-hour and 10-year, 24-hour events) and incorporated the new results into Table 6. For UD-4, the higher slope resulted in a higher Flow Velocities, while Flow Depths and Flow Areas are slightly lower. For UD-5, the slope went from 12.8 to 9.9%; the Flow Velocities increased in comparison to Table 6 from the June submittal, and Flow Depths and Flow Areas are approximately one-half what they were previously: these are not the expected results for a decrease in slope. Examination of the FlowMaster sheets from the June submittal shows that the values entered in the June version of Table 6 were erroneous: comparison of the June and August FlowMaster sheets shows that the calculated Flow Velocities have dropped and the Flow Depths and Areas have increased as would be expected with a lower gradient.

Ditches DD-3 and DD-4

For DD-3 and DD-4, the Permittee retained the slope values from the June submittal even though the lengths were revised for the September submittal. The FlowMaster calculation results for DD-3 and DD-4 in Appendix 4 and Table 7 did not change between the June and September submittals; FlowMaster printouts in Appendix 4 are dated 06/25/10 in both submittals.

Culverts UC-1, UC-2, and UC-3

The Permittee revised the slope for UC-2 based at least in part on this revised length, but also adjusted slopes for UC-1 and UC-3, then reran FlowMaster and updated Table 8 with the new values for all three culverts.

Findings:

Operation Hydrologic Information is adequate to meet the requirements of the Utah Coal Mining Rules.

RECOMMENDATIONS:

The Division should approve this amendment.